

caArray Use Cases

Julie Zhu
Northwestern University

Use case 1: Import Microarray dataset as MAGE-ML

We would like to use caArray to import dataset in MAGE-ML format to an in-house MAGE-OM compliant Oracle database.

Use case 2: Export Microarray dataset as MAGE-ML

We would like to use caArray to export MAGE-ML so that we can export any data stored in an in-house MAGE-OM compliant Oracle database to any other MAGE-OM compliant databases.

Use case 3: Upload Affymetrix Microarray

We would like to use caArray to upload the MIAME information along with the following affymetrix microarray files to an in-house MAGE-OM compliant Oracle database assuming 2 treatments and 4 replicates per treatment for the experiment to be uploaded. In addition, we would like to have caArray to store .CEL files in a designated file system directory for R routines to use.

EXP1_TRT1_REP1.CHP
EXP1_TRT1_REP2.CHP
EXP1_TRT1_REP3.CHP
EXP1_TRT1_REP4.CHP
EXP1_TRT2_REP1.CHP
EXP1_TRT2_REP2.CHP
EXP1_TRT2_REP3.CHP
EXP1_TRT2_REP4.CHP

EXP1_TRT1_REP1.CEL
EXP1_TRT1_REP2.CEL
EXP1_TRT1_REP3.CEL
EXP1_TRT1_REP4.CEL
EXP1_TRT2_REP1.CEL
EXP1_TRT2_REP2.CEL
EXP1_TRT2_REP3.CEL
EXP1_TRT2_REP4.CEL

EXP1_TRT1_REP1.rpt
EXP1_TRT1_REP2.rpt
EXP1_TRT1_REP3.rpt
EXP1_TRT1_REP4.rpt

EXP1_TRT2_REP1.rpt
EXP1_TRT2_REP2.rpt
EXP1_TRT2_REP3.rpt
EXP1_TRT2_REP4.rpt

EXP1_TRT1_REP1.exp
EXP1_TRT1_REP2.exp
EXP1_TRT1_REP3.exp
EXP1_TRT1_REP4.exp
EXP1_TRT2_REP1.exp
EXP1_TRT2_REP2.exp
EXP1_TRT2_REP3.exp
EXP1_TRT2_REP4.exp

In addition, we would like to use caArray to upload the following image files in a designated file system directory along with the experiment and store the URL in the Oracle database for future retrieval, viewing and image reanalyzing when new image analyzing software becomes available.

EXP1_TRT1_REP1.DAT
EXP1_TRT1_REP2.DAT
EXP1_TRT1_REP3.DAT
EXP1_TRT1_REP4.DAT
EXP1_TRT2_REP1.DAT
EXP1_TRT2_REP2.DAT
EXP1_TRT2_REP3.DAT
EXP1_TRT2_REP4.DAT

Use case 4: Upload 2-channel Microarray

We would like to use caArray to upload the MIAME information along with the following 2-channel microarray files to the backend Oracle database assuming 2 treatments and 4 replicates per treatment for the experiment to be uploaded.

EXP1_TRT1_REP1.GPR
EXP1_TRT1_REP2.GPR
EXP1_TRT1_REP3.GPR
EXP1_TRT1_REP4.GPR
EXP1_TRT2_REP1.GPR
EXP1_TRT2_REP2.GPR
EXP1_TRT2_REP3.GPR
EXP1_TRT2_REP4.GPR

EXP1_TRT1_REP1.GAL
EXP1_TRT1_REP2.GAL
EXP1_TRT1_REP3.GAL

EXP1_TRT1_REP4.GAL
EXP1_TRT2_REP1.GAL
EXP1_TRT2_REP2.GAL
EXP1_TRT2_REP3.GAL
EXP1_TRT2_REP4.GAL

With both use cases 3 and 4, we would like to use caArray to assign the initial ownership of the uploaded experiment so that only the owner can view the experiment until he/she authorize others to view/analyze the datasets in a separate module. This owner may or may not be the user uploading the experiment.

Relevant issues for Architecture:

1. MAGE-OM compliant
2. Ability to upload large datasets in a reasonable speed
3. Ability to generate MAGE-ML and import MAGE-ML in a reasonable speed
4. Ability to track MIAME such as experiment condition, experiment design, bio-source, array design, sample extraction condition, hybridization condition and scanning parameters et al
5. Ability to track ownership